THE ZOOLOGIST.

THIRD SERIES.

Vol. XI.] MAY, 1887. [No. 125.

REMARKS ON BRITISH BATS.

By the Editor.

Plate III.

It is satisfactory to note the increased attention which is being paid to the British Bats by several of our esteemed correspondents. Respecting many of the species, indeed in regard to the majority of them, it must be confessed there is still a great deal to be learnt which time only will disclose; but should success attend our efforts to procure and figure *from the life* every one of our British species in turn, so as to render their appearance familiar to our readers, we may hope ere long with their assistance to place on record a far more satisfactory account of them than at present exists.

According to the best authorities, there is reason to believe that at least fifteen species of bats are to be found in the British Islands, although in regard to one of them at least, *Vespertilio murinus*, Schreber, the evidence of its occurrence in this country is of an extremely slender character.*

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* In the second edition of Bell's 'British Quadrupeds,' 1874, it is stated (p. 49) that *V. murinus* "has hitherto only been taken in the gardens of the British Museum," and the author adds that he has "failed in meeting with any other record of its appearance than that given, which is not altogether satisfactory." In our annotated copy of this work we have a marginal note to the effect that the following additional localities have been reported for *Vespertilio murinus*, namely, Sherborne, Dorset (C. W. Dale), Epping (Doubleday), and Freshwater, Isle of Wight (Hadfield); with the further

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Another species, called by Bell the Particoloured Bat, *Vesperugo discolor*, Natterer, has been included in the British list on the strength of a single example in the British Museum, which was taken many years ago at Plymouth by Dr. Leach.* To this, however, we may add that Mr. John Hancock has a second example of this species which was captured in Yarmouth Roads in 1834.†

Bechstein's Bat, *Vespertilio bechsteini*, Leisler, is of quite as rare occurrence in this country, being, as Bell states (p. 52), ' only known as British from the occurrence of specimens taken by Mr. Millard in the New Forest, and now in the British Museum." We have the excellent authority of our old friend Mr. Bond for stating that two specimens of Bechstein's Bat have been taken at Preston, near Brighton. The impression that it had also been met with at Godstow in Berkshire (Zool. 1884, p. 483) has been corrected by Mr. J. E. Kelsall (Zool. 1885, p. 146), who identified the specimen in question as *V. nattereri*.

Of the fifteen British species above referred to, fourteen only are noticed by Bell. The fifteenth is *Vespertilio dasycneme*, Boie, which is reported to have been captured on the banks of the Stour.‡ It is thus described by Dr. G. E. Dobson, whose valuable Catalogues of Asiatic Chiroptera, and of the Collection of Bats in the British Museum form the latest and best text-books on this subject:—

"*Vespertilio dasycneme*, Boie, Isis, 1825, p. 1200. The ears are comparatively shorter than in *V. daubentonii;* laid forwards they do not reach the end of the nose; the inner margin of the ear is straight in its lower ascending portion for about one-third its length, then regularly convex to the tip, which is obtusely rounded off; the outer margin is straight beneath the tip for about one-third of its length, becoming gradually convex and

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remark that "Mr. Blake Knox also has received Irish specimens." We confess, however, to have considerable misgivings whether the species in any of these cases has been correctly determined, and we should be very glad if any reader of these lines could enable us to clear up the uncertainty with which the subject is attended.

* *Cf.* Rep. Plymouth Inst. p. 43, and Bellamy, Nat. Hist. S. Devon, p. 193.

† *Cf.* Trans. Norfolk Nat. Soc. 1873-74, p. 80.

‡ *Cf.* Buckton, Proc. Linn. Soc. 1853, p. 260, where the species is treated as a variety of *V. daubentonii*. Tomes (Zool. 1854, p. 4361) considered it to be *dasycneme*.

terminating abruptly opposite the base of the inner margin. The tragus terminates in an obtuse rounded point; the inner margin is slightly concave, the outer convex.

"Thumb armed with a very large claw. Wings from the distal extremity of the tibia; the point of origin of the wing-membrane is very sharply defined. The calcaneum extends rather more than half way between the ankle and the tail.

"Fur above dark at the base, the hairs with light brown extremities; beneath black at the base, the extremities white.

"Both the first and second upper premolars are drawn inwards, owing to the proximity of the third large premolar to the canine; the second premolar is extremely small, and more internal than the first. The lower incisors are not crowded; the second lower premolar is about half the size of the first premolar; the third premolar is less than the canine in vertical extent.

"Length: head and body, 2·4 in.; tail, 2 in.; head, 0·75 in.; ear, 0·6 in.; tragus, 0·3 × 0·09 in.; fore arm, 1·8 in.; thumb, 0·35; second finger, 3·1 in.; fourth finger, 2·4 in.; tibia, 0·8 in.; calcaneum, 0·65 in.; foot and claws, 0·4 in."

Adopting Dr. Dobson's nomenclature, but taking the species in the order named by Bell, for greater convenience of reference, it may be observed that the fifteen species of bats now regarded as British belong to two very distinct families, *Vespertilionidæ* and *Rhinolophidæ*, and are referable to five genera, namely, *Vesperugo* (five species), *Vespertilio* (six species), *Plecotus* (one species), *Synotus* (one species), and *Rhinolophus* (two species). Of these the first four genera belong to the family

VESPERTILIONIDÆ.

The members of this family are easily distinguishable by their simple nostrils terminating the conical moderately elongated muzzle, by the long tail wholly contained within the interfemoral membrane, and by the upper incisors which are separated by a wide space and placed near the canines. Their eyes are minute; and the inner margins of the ears arise from the sides of the head, not from the forehead.

Genus 1. VESPERUGO, Keyserling & Blasius, Wiegm. Archiv. 1839, p. 312.

Muzzle generally very broad and obtuse, the glandular prominences between the eyes and the nostrils well developed, increasing the width of the face; crown of the head flat, or very slightly raised above the face-line; nostrils opening sublaterally by simple crescentic apertures on the front surface of naked extremity of the muzzle; ears separate, generally much shorter than the head, broad and triangular, the outer margin extending forwards beyond the base of the tragus, the internal basal lobe rounded; tragus generally short and obtuse, the outer margin straight or concave. Tail less than the length of the head and body; the calcaneum generally supports on its posterior margin a small rounded cutaneous lobe (the post-calcaneal lobe), which in this genus reaches its greatest development; feet short and broad; membranes thin.

Dentition.—Inc. $\frac{2-2}{6}$; c. $\frac{1-1}{1-1}$; p.m. $\frac{2-2}{2-2}$ or $\frac{1-1}{2-2}$; m. $\frac{3-3}{3-3}$.

Outer upper incisors unicuspidate and shorter than the inner incisors, often minute, rarely absent; first upper premolar minute or absent; first lower premolar in the tooth row, not crowded, its summit slightly outwards.

Species, *noctula*, Schreber; *leisleri*, Kuhl; *discolor*, Natterer; *pipistrellus*, Schreber; and *serotinus*, Schreber. The descriptions of all these will be found in Bell's work.

Genus 2. VESPERTILIO, Keyserling & Blasius; Wiegm. Archiv 1839, p. 306.

Muzzle long; glandular prominence between the nostrils and eyes small, scarcely increasing the width of the face; nostrils opening sublaterally by simple crescentic apertures; crown of the head vaulted, slightly elevated above the face-line; ears separate, oval, longer than broad, generally equalling at least—often exceeding—the length of the head; the internal base lobe angular, the external margin terminating opposite the base of the tragus or very slightly in front of it; tragus long, generally acute; the inner margin slightly convex or straight; the outer margin convex below, straight or slightly concave above. Tail less than (or very rarely equal to) the length of the head and body; post-calcaneal lobe absent or very small. Face hairy.

Dentition.—Incisors $\frac{2-2}{6}$; the upper incisors nearly equal; the summit of the outer incisor on each side directed vertically downwards or curved slightly outwards, that of the inner incisor directed forwards and inwards; the inner incisor on each side generally with a distinct second cusp placed posteriorly and externally; premolars $\frac{3-3}{3-3}$; first and second upper premolars very small, the second premolar often minute and pressed inwards; molars $\frac{3-3}{3-3}$; the last upper molar rather less than half the antepenultimate molar.

Species:—*murinus*, Schreber; *bechsteini*, Leisler; *nattereri*, Kuhl; *daubentonii*, Leisler; *mystacinus*, Leisler; *dasycneme*, Boie. The descriptions of these (with the exception of *dasycneme*, given on p. 162) will be found in Bell's work.

Genus 3. PLECOTUS, Geoffroy, Descript. de l'Egypte, ii. p. 112 (1812).

Crown of the head elevated above the short and flattened muzzle. Nostrils opening on the upper surface at the extremity of the muzzle, in front of semilunar naked depressions. Ears united above the forehead, very large, the outer margin ending opposite the base of the tragus, the inner margin with an abrupt rounded projection directed inwards above the base; tragus very large, tapering upwards, with a lobe at the base of the outer margin. Feet slender; toes more than half the length of the whole foot. Tail equal in length to the head and body, contained (except part of the last caudal vertebra) within the interfemoral membrane. Post-calcaneal lobe distinct. Skull considerably vaulted; bones forming the brain-case very thin; occipital and sagital crests scarcely developed.

Dentition.—Inc. $\frac{2-2}{6}$; c. $\frac{1-1}{1-1}$; p.m. $\frac{2-2}{2-2}$; m. $\frac{3-3}{3-3}$.

Species:—*auritus*, Linn. Described by Bell.

Genus 4. SYNOTUS, Keyserling & Blasius, Wiegm. Archiv. 1839, p. 305.

Crown of the head distinctly elevated above the short and obtuse muzzle. Nostrils opening on the upper surface at the extremity of the muzzle, in front of a naked space, bounded laterally by the raised edges of the very prominent sides of the face; anteriorly the upper lip is divided on each side by a deep groove passing down from the nostril; and in the intervening space between and below the nostrils is prominent and rounded. Ears confined at the bases of their inner margins, which meet on the forehead slightly in front of the eyes; the outer margin is also carried forward in front of the eyes, terminating on the face above the upper lip, so that the eye is contained within the external ear; tragus triangular above and attenuated towards the tip. Feet slender with long toes. Tail nearly as long or longer than the body. Skull considerably vaulted behind the short muzzle.

Dentition.—Inc. $\frac{2-2}{6}$; c. $\frac{1-1}{1-1}$; p.m. $\frac{2-2}{2-2}$; m. $\frac{3-3}{3-3}$.

Species:—*barbastellus*, Schreber. Described by Bell, who, however, has created some confusion by describing it (p. 81) as *Barbastellus daubentonii*, this specific name belonging to a very different species, *Vespertilio daubentonii* (*op. cit.*, p. 60).

RHINOLOPHIDÆ.

The bats belonging to this family are readily distinguishable by the curious form of their foliaceous nasal appendages, and by their rudimentary premaxillary bones supporting two minute, usually bilobed incisors; their molars are acutely tubercular, and enable them to crush with ease the hard cases of coleopterous insects which (from remains found in their stomachs) appear to constitute a large proportion of their food. Their eyes are minute, and often with difficulty discovered in spirit specimens; the eye-ball is extremely small, and the optic nerve reduced to the thickness of a very fine thread, contrasting remarkably with the development of the auditory and olfactory nerves in the same animals.

Genus 5. RHINOLOPHUS, Geoffroy, Desm. Nouv. Dict. d'Hist. Nat. xix. p. 383 (1803).

Nose-leaf very complicated, consisting of three distinct portions—anterior, central, and posterior; the anterior horizontal portion is horse-shoe-shaped, usually angularly emarginate in front, containing within its circumference the nasal orifices and the central erect nasal process; the posterior nose-leaf is triangular, erect, with cells on its anterior surface; the central process rises between and behind the nasal orifices, is flattened anteriorly, and posteriorly sends backwards a vertical laterally compressed process, which is either connected with the front surface of the nose-leaf or free. Base of the outer side of the ear expanded, forming a large antitragus. Wings very large; metacarpal bone of fourth finger exceeding that of second in length. Basioccipital very narrow between auditory bullæ, in most species linear; cochleæ prominent, deeply grooved externally; foramen rotundum united with sphenoidal fissure.

Dentition.—Inc. $\frac{2}{4}$; c. $\frac{1-1}{1-1}$; p.m. $\frac{2-2}{3-3}$; m. $\frac{3-3}{3-3}$.

Second lower premolar generally minute and placed outside the teeth-row; first upper premolar minute, pointed, standing in the teeth-row, or lying in the outer angle between the closely approximated canine and second large premolar.

Species:—*ferrum-equinum* and *hipposideros*. Both described by Bell.

Arranged in tabular form the British species of Chiroptera stand thus:—

Fam. VESPERTILIONIDÆ.	Gen. *Vesperugo.*	*noctula.* *leisleri.* *discolor.* *pipistrellus.* *serotinus.*
	Gen. *Vespertilio.*	*murinus.* *bechsteini.* *nattereri.* *daubentonii.* *mystacinus.* *dasycneme.*
	Gen. *Plecotus.*	*auritus.*
	Gen. *Synotus.*	*barbastellus.*
Fam. RHINOLOPHIDÆ.	Gen. *Rhinolophus.*	*ferrum-equinum.* *hipposideros.*

The species, of which a figure is now given, *Vesperugo noctula* (Plate III.), is doubtless the best known of the larger bats in this country, and is very widely dispersed. Regarding its distribution in the British Islands, Bell states that it is confined to England, the northernmost locality known to him being Northallerton in Yorkshire, a statement repeated by Alston ('Fauna of Scotland,' 1880, p. 7), and by the authors of the 'Handbook of Yorkshire Vertebrates,' 1881. But, although it seems pretty clear that it does not occur in Scotland, or at least has not been satisfactorily identified there,[*] the case is apparently otherwise in Ireland. For there is reason to believe that some specimens of a large bat taken at Tandragee, Co. Armagh, and reported to be *Vesperugo leisleri*, were in reality *V. noctula*. To be more explicit. In 'The Zoologist' for July, 1874, Mr. R. M. Barrington gave a very interesting account (pp. 4071 - 4074) of the discovery, in June, 1868, of a colony of large bats in the demesne of the Duke of Manchester at Tandragee, Co. Armagh, and of the subsequent capture of several (presumably of the same species) at the same place in May, 1874. Mr. Barrington identified them as *V. leisleri*, observing (p. 4072) "they were all of the hairy-armed species. I have presented two specimens to the British Museum." These two specimens, at our particular request, were examined by Dr. Dobson in 1876, when preparing his Monograph of the Asiatic Chiroptera, and he pronounced them to be immature examples of *V. noctula*. Considering his intimate acquaintance with this order of mammals, it seems to us that this circumstance establishes the fact of the occurrence of the Noctule in Ireland, while it does not necessarily invalidate other records of the occurrence in the same country of Leisler's hairy-armed bat.[†] We would earnestly invite the attention of Irish naturalists to this matter, and beg them to re-examine such specimens as they may possess, or have access to, and favour us with their conclusions. It may be useful to add, in the words of Dr. Dobson, that in all respects, except in the relative size and position of the incisors, *V. leisleri* resembles *V. noctula*, and appears on an external examination to be but a small form of that species. But while the outer incisor on each side in *V. noctula* is but half the transverse diameter at its base of the inner incisor, in this species it is equal to it; the lower incisors also stand in the direction of the jaws, and are not crowded. Length of an adult male *V. leisleri* (preserved in alcohol), head and body, 2·3 in.; tail, 1·65 in.; head, 0·7 in.; ear, 0·6 in.;

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[*] Fleming (Brit. An., p. 6) identified the *Vespertilio auriculatus* of Walker's 'Fauna Scotica' with *V. noctula*, and this species is stated by Sir Wm. Jardine to have been "seen" near the River Annan in Dumfriesshire (New Stat. Acct. Dumfries, p. 175), but its occurrence in Scotland has not been confirmed.

[†] *Cf.* Bell, p. 27. Zool. 1874, pp. 4071, 4236; Zool. 1875, pp. 4419, 4532; Zool. 1883, p. 116.

tragus, 0·2 × 0·15 in.; forearm, 1·5 in.; thumb, 0·25 in.; second finger, 2·7 in.; fourth finger, 1·8 in.; tibia, 0·65 in; foot and claws, 0·3 in. Or, to compare the measurements of the two species:—

Both males.	Length.	Tail.	Head.	Ear.	Tragus.	Fore-arm.	Thumb.	2nd finger.	4th do.	Tibia.	Foot & claws.
V. noctula ..	3·0	2.0	0·9	0·75	0·25	2·0	0·3	3·7	2·1	0·75	0·45
V. leisleri ..	2·3	1·65	0·7	0·6	0·2	1·5	0·25	2·7	1·8	0·65	0·3

To show how easily a mistake may be made, even by a practised observer, without a very careful comparison, we may remark that *V. leisleri* has been recorded to have occurred in Norfolk, near Norwich (Paine, Ann. Nat. Hist. ii. p. 181, 1839), where fourteen were said to have been taken from a hollow tree; but it was subsequently stated (*tom. cit.*, p. 481) that the specimens in question had been examined by the Rev. L. Jenyns, who was of opinion that the species was not *V. leisleri*, though he was uncertain whether it was the young of *V. noctula* or a distinct species.

Bell states (p. 18) that the Noctule is a tree-loving species, and that not a single instance had come to his knowledge of its retirement *to buildings* during the day. Doubtless hollow trees usually afford it shelter, but, as an exception to the rule, we may remark that in West Sussex we have known these bats to resort to the roofs of old thatched cottages, and have seen them go up under the eaves.

Mr. W. Harcourt Bath, referring to the abundance of this species in the midland counties ('The Field,' Oct. 9th, 1886), states that in the day-time they conceal themselves in holes of trees, *and among ivy*.

Gilbert White remarked that he never saw the Noctule on the wing till the end of April, nor later than July. This is curious; for, unless the habits of the animal have changed, he might have observed it in a parish which he occasionally visited (the parish of Harting, on the borders of Hampshire and Sussex) during the months of August and September. We have repeatedly seen them on the wing there during these months, and well remember shooting two of them for a friend during the first week of September. A marginal note in our annotated copy of Bell's work indicates that John Wolley saw the Noctule in Cambridgeshire as late as the first week of November.

Another observation of Gilbert White was to the effect that this bat emits a very offensive odour, a circumstance which must have been remarked by every one who has handled a living specimen. Mr. D'Urban, of Exeter, states that it possesses two large glands *in the mouth*, from which this odour is emitted. It is much infested with parasites, as indeed is the case with other species of bats which we have examined in a living state. An experiment of putting a minute drop of prussic acid on the tongue of a Noctule, in order to kill it speedily, resulted in the unlooked-for effect of causing all the parasites to die and drop off before the animal itself had ceased to live. While on the subject of parasites, it may be well to direct attention to Prof. Westwood's paper on the parasites of bats, published in the 'Transactions of the Zoological Society,' vol. i. pp. 275 - 294. This paper, which is illustrated, will be found useful by those who wish to learn something on this subject.

It is well known that the Noctule is gregarious, and that large numbers are sometimes found clustered together in hollow trees. Mr. Gurney states that the sexes live in separate colonies, the females being more numerous. Upon this we may remark that in February last an old and decayed tree was felled in the Bishop of London's park at Fulham, in the hollow of which were found clinging a solitary pair of Noctules. They were brought to us alive the following day, and proved to be male and female. From one of these the accompanying portrait was drawn by Mr. G. E. Lodge. Note the position in which the tail is carried as compared with that of *R. ferrum-equinum* (Plate I.)

We have no information as to the occurrence of this species in Wales, although it is met with as far to the south-west as Cornwall (*cf.* Cocks, 'Naturalist,' i. (1851), p. 37). We should be glad also to receive some confirmation (or refutation) of the statement (Bell, p. 23) that in England the northernmost locality from which specimens have been received is Northallerton, in Yorkshire. Certainly it is not included in the excellent Catalogue of the Mammalia of Northumberland and Durham (Trans. Tyneside Nat. Field Club, vol. vi. (1864), pp. 111 - 177),* although, strange to say, a single specimen of *V. serotinus* (usually regarded as more southern in its distribution) is stated by them to have been taken at Cleadon, and to be preserved in the museum at

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* Mr. R. B. Lee informs us that it occurs at Kendal.

Newcastle-on-Tyne. Is this possibly *V. noctula?* The "rich chestnut colour of the fur" particularly alluded to by the authors of the catalogue cited is a description not inapplicable to *V. noctula.*

A SYNOPSIS OF THE SNAKES OF SOUTH AFRICA.

By G. A. Boulenger.

Having received several applications for information respecting the nomenclature of South African Snakes, I have thought that the publication of the following list would be welcome not only to naturalists in the colony but also to herpetologists elsewhere. The grand work of Sir Andrew Smith (1838—49) is an imperfect guide to the identification of South African reptiles, for the reason that the species described are not arranged in systematic order, and that a great number, often the commonest, are either entirely left out or alluded to by name only, without any definition of their characters. The standard ophiological works of Duméril and Bibron, Günther, and Jan, to which I have constantly referred in the following list, as being almost indispensable to the student, are likewise incomplete and out of date. I have therefore added an artificial key (the characters selected applying only to South African forms) to genera and species, which I hope will greatly facilitate their recognition, and perhaps lead to the discovery of some that may be new to science, or hitherto unrecorded from South Africa. I have also indicated the localities whence specimens have been received by the British Museum, and drawn attention to the desiderata. I have taken the 25° lat. S. as the northern limit of the S. African district.

SYNOPSIS OF THE FAMILIES AND GENERA.

I. Stenostomatidæ. Blind, worm-like burrowing snakes, with the belly scaled like the back; the shield under which the eye is situated borders the lip.

A single genus. - - - - - - - Stenostoma.

II. Typhlopidæ. Blind, worm-like burrowing snakes, with the belly scaled like the back; the shield under which the eye is situated does not reach the lip.

A single genus. - - - - - - - Typhlops.

III. Boidæ. A spur (rudiment of hind limb) on each side of the vent. Scales very small, more than fifty across the body; belly shielded. Pupil linear, erect.
A single genus. - - - - - - - - Python.

IV. Colubridæ. Head with large symmetrical shields. Belly shielded. No grooved maxillary fangs anteriorly.
A. Subcaudal shields in a single row, like the ventrals; eye very small, with round pupil. - - - - - - - - Uriechis.
B. Subcaudals divided.
1. Scales smooth, equal; pupil round.
a. Rostral shield very large, with horizontal cutting edge. Temnorhynchus.
b. Rostral without cutting edge.
α. Nostril pierced between two shields, the second of which touches the eye. - - - - Choristodon.
β. Two or more shields on a line between the nostril and the eye.
* Loreal shield (between nasal and præocular) not much longer than deep.
15 scales across the middle of the body. - - Homalosoma.
27 or 29 scales across the middle of the body. - Coronella.
17 or 19 scales across the middle of the body. Psammophylax.
** Loreal shield at least twice as long as deep; 15 or 17 scales across the middle of the body.
Snout pointed and strongly projecting beyond the lower lip; tail not five times the length of the head. Rhamphiophis.
Snout long and obtuse; tail long; frontal (interorbital) shield narrow. - - - - - - - - Psammophis.
Snout obtuse; colour green. - - - Philothamnus.
2. Dorsal scales keeled.
Eye extremely large, with round pupil; vertebral scales broader than the others, unicarinate. - - . - Bucephalus.
Eye very large, with horizontal pupil. - - Dryophis.
Eye moderate; vertebral scales broader than the others, bicarinate. - - - - - - - Heterolepis.
Eye moderate, with vertical pupil; scales equal. Dasypeltis.
3. Scales smooth; pupil vertically elliptic.
a. Head broad, considerably broader than the neck; 19 scales across the middle of the body. - - Leptodira.
b. Head not very distinct from the neck.
Nostril in a single nasal; 17 scales across the middle of the body. - - - - - - - - Lycophidium.
Nostril between two nasals; 19 to 23 scales across the middle

of the body; anterior maxillary teeth but slightly larger than the others. - - - - - - - LAMPROPHIS.

Nostril between two nasals; 23 or more scales across the middle of the body; anterior teeth considerably larger than the others. - - - - - - - - - BOODON.

V. ELAPIDÆ. Head with large symmetrical shields. Belly shielded. Long grooved or canaliculate maxillary fangs anteriorly. *Poisonous.*

A. Eye large or moderate.

1. Rostral shield not of unusual proportions.

a. Dorsal scales smooth.

Anal shield single. - - - - - - - - NAIA.

Anal divided; colour green. - - - DENDRASPIS.

b. Dorsal scales keeled.

Two labial shields enter the eye; scales strongly keeled. SEPEDON.

Eye separated from the labials by a subocular shield; dorsal scales feebly keeled, laterals smooth. - - - CAUSUS.

2. Rostral shield enormous, triangular. - - ASPIDELAPS.

B. Eye very small.

13 or 15 scales across the body. - - - - - ELAPS.

21 or more scales across the body; colour uniform blackish. ATRACTASPIS.

VI. VIPERIDÆ. Upper surface of head covered with small scales. Pupil vertical, linear. *Poisonous.*

A single genus. - - - - - - - - VIPERA.

I. STENOSTOMATIDÆ.

1. *Stenostoma*, Wagl.

1. *Stenostoma nigricans*, Schleg.; Dum. & Bibr. vi. p. 326; Smith, Ill. pl. li. fig. 4, pl. liv. figs. 21, 25; Jan, Icon. 2, v. & vi. 8. *S. conjunctum*, Jan, Icon. 2, v. & vi. 9. "Inhabits the interior of South Africa, and is generally found under large flat stones, or other bodies lying on the surface of the earth."—*Smith.* Port Elizabeth (B. M.)

II. TYPHLOPIDÆ.

2. *Typhlops*, Schn.

A. 28 to 32 scales round the middle of the body; snout with angular edge.

Eye entirely under the ocular; edge of snout sharp, cutting. - *delalandii.*

Eye under the suture between the ocular and the præocular. - *bibronii.*

B. 20 to 26 scales round the body; snout rounded.

Upper part of rostral shield broader than the contiguous (nasal) shields; nasal semidivided; eye entirely under the ocular. - - *verticalis.*

Upper part of rostral broader than the contiguous shields; nasal completely divided; eye under the suture between the ocular and the præocular. - - - - - - - - - *mossambicus.*
Upper part of rostral not or scarcely wider than the contiguous shields; 20 scales round the body. - - - - - - - *capensis.*

2. *Typhlops delalandii*, D. & B. *Onychocephalus delalandii*, Dum. & Bibr. vi. p. 273; Smith, Ill. pl. li. fig. 1, & pl. liv. figs. 1—4. *Typhlops smithii*, Jan, Icon. 1, v. 5. *Typhlops lalandii*, Jan, Icon. 4, iv. 1. "Is pretty widely distributed over the southern parts of Africa, and is generally found under large stones and trunks of decayed trees, or in soil broken up by the plough, or otherwise displaced by the spade or pick-axe."—*Smith.* Cape, Karroo (B. M.)

3. *Typhlops bibronii*, Smith. *Onychocephalus bibronii*, Smith, Ill. pls. li. fig. 2, & pl. liv. figs. 5—8. "Inhabits the country to the northward of Latakoo."—*Smith.* King William's Town, Port Natal, Lessouto (B. M.)

4. *Typhlops verticalis*, Smith. *Onychocephalus verticalis*, Smith, Ill. pl. liv. fig. A. "Inhabits the interior districts of South Africa."—*Smith.* B. M.

5. *Typhlops mossambicus*, Peters; Jan, Icon. 5, v. 3. Delagoa Bay (Jan).

6. *Typhlops capensis*, Smith. *Onychocephalus capensis*, Smith, Ill. pls. li. fig. 3, & liv. figs. 9—16. "Inhabits the interior of South Africa."—*Smith.* Cape Town (B. M.)

III. BOIDÆ.

3. *Python*, Cuv.

7. *Python natalensis*, Smith, Ill. pl. ix. *P. sebæ*, var. *natalensis*, Jan, Icon. 8, iv. "This snake was formerly an inhabitant of the district now within the Cape Colony. At present it is not to be found within hundreds of miles of the boundaries of the colony, and few specimens have been obtained nearer than Port Natal."—*Smith.* Natal (B. M.)

IV. COLUBRIDÆ.

4. *Uriechis*, Peters.

15 scales across the middle of the body; pale yellowish brown, head and neck black. - - - - - - - - - - - *capensis.*
25 scales across the body; uniform black. - - - - *microlepidotus.*

8. *Uriechis capensis*, Smith. *Elapomorphus capensis*, Smith, Ill., App. p. 16. *Aparallactus capensis*, Smith, l. c. *Uriechis capensis*, Jan, Icon. 15, i. 5. "Inhabits Kaffirland, to the eastward of the Cape Colony."—*Smith.* Kaffirland (B. M.)

9. *Uriechis microlepidotus*, Günther, Ann. & Mag. Nat. Hist. (3), v. 1860, p. 168, pl. ix. Natal (B. M.)

5. *Choristodon*, Smith.

10. *Choristodon concolor*, Smith, Ill., App. p. 18. "Inhabits Kaffirland to the eastward of the Cape Colony."—*Smith.* Not in the British Museum.

6. *Temnorhynchus*, Smith.

11. *Temnorhynchus sundevallii*, Smith, Ill., App. p. 17. *Rhinostoma cupreum*, Günth. Col. Sn. p. 9. "Inhabits Kaffirland, to the eastward of the Cape Colony."—*Smith.* Orange River (B. M.)

7. *Homalosoma*, Wagl.

12. *Homalosoma lutrix*, L. *Homalosoma arctiventris*, Smith, Ill., App. p. 16. *Homalosoma lutrix*, Dum. & Bibr. vii. p. 110; Günth. Col. Sn. p. 20; Jan, Icon. 13, iii. 3. "Inhabits the whole of Southern Africa, and is generally observed among dry grass or in loose soil, more especially near the roots of shrubs." —*Smith.* Cape, Natal (B. M.)

8. *Coronella*, Laur.

13. *Coronella cana*, L. *Coluber canus*, Smith, Ill. pls. xiv.—xvii. *Coronella cana*, Dum. & Bibr. vii. p. 613; Günth. Col. Sn. p. 40. Cape, Cape Cook (B. M.)

Black variety, *Coronella phocarum*, Günth. Proc. Zool. Soc. 1872, p. 836. Robben Island (B. M.)

9. *Psammophylax*, Fitz.

Rostral shield not deeper than broad, not extending between the internasals. - - - - - - - - - - *multimaculatus.*
Rostral deeper than broad, wedged in between the internasals. *rhombeatus.*

14. *Psammophylax multimaculatus*, Smith. *Amplorhinus multimaculatus*, Smith, Ill. pl. lvii. *Dipsas smithii*, Dum. & Bibr. vii. p. 1162. *Coronella multimaculata*, Günth. Col. Sn. p. 38.

Psammophylax multimaculatus, Jan, Icon. 19, i. 1. "Rarely obtained in South Africa; found in arid barren localities."—*Smith.* Cape (B. M.)

15. *Psammophylax rhombeatus*, L. *Trimerorhinus rhombeatus*, Smith, Ill. pl. lvi. *Dipsas rhombeata*, Dum. & Bibr. vii. p. 1154. *Psammophylax rhombeatus*, Günth. Col. Sn. p. 31. N. vulg., "Shaap Sticker." "Occurs throughout the whole of South Africa, and is generally found in dry barren situations, but not unfrequently also in grassy districts."—*Smith.* Cape (B. M.)

10. *Rhamphiophis*, Peters.

16. *Rhamphiophis multimaculatus*, Smith. *Coronella multimaculata*, Smith, Ill. pl. lxi. *Dipsina multimaculata*, Jan, Icon. 19, ii. 1. "Country of the Bushmen, near to the Orange River. Burrow in the sand."—*Smith.* Damaraland (B. M.)

11. *Psammophis*, Schleg.

17 scales across the middle of the body. - - - - - - *sibilans.*
15 scales across the middle of the body. - - - - - - *crucifer.*

17. *Psammophis sibilans*, L.; Günth. Col. Sn. p. 136; Jan, Icon. 34, iii. *P. moliniger*, Dum. & Bibr. vii. p. 891. In sandy localities. Cape, Port Natal, Kaffraria, Orange River (B. M.) Curiously, this as well as the next species are omitted from Smith's work.

18. *Psammophis crucifer*, Merr.; Dum. & Bibr. vii. p. 892; Günth. Col. Sn. p. 135; Jan, Icon. 34, iv. 3. Cape, Namaqualand (B. M.)

12. *Philothamnus*, Smith.

Ventral shields without a lateral keel. - - - - *hoplogaster.*
Ventral shields with a lateral keel. - - - - - *natalensis.*

19. *Philothamnus hoplogaster*, Günth. *Ahætulla hoplogaster*, Günth. Ann. & Mag. Nat. Hist. (3), xi. 1863, p. 284. Port Natal, Damaraland (B. M.)

20. *Philothamnus natalensis*, Smith, Ill. pl. lxiv. "Frequents shrubs and trees at and in the neighbourhood of Port Natal."—*Smith.* Cape, King William's Town, Port Natal, Orange River, Damaraland (B. M.)

13. *Bucephalus*, Smith.

21. *Bucephalus capensis*, Smith, Ill. pls. x.—xiii.; Günth. Col. Sn. p. 143. *Bucephalus typus*, Dum. & Bibr. vii. p. 878; Jan, Icon. 32, iv. N. vulg., "Boom-slange," Tree Snake. Port Natal (B. M.)

Uniform bright green variety: *B. viridis*, Smith, pl. iii. Old Latakoo.

14. *Dryophis*, Boie.

22. *Dryophis kirtlandii*, Hallow. *Thelotornis capensis*, Smith, Ill., App. p. 19. *Dryiophis kirtlandii*, Günth. Col. Sn. p. 156. *Thelotornis kirtlandii*, Peters, Reise n. Mossamb. iii. p. 131. "Inhabits Kaffirland and the country towards Port Natal."—*Smith*. Arboreal. The British Museum has not yet received this species from South Africa.

15. *Lycophidium*, Fitz.

23. *Lycophidium capensis*, Smith. *Lycodon capensis*, Smith, Ill. pl. v. *Lycophidion horstockii*, Dum. & Bibr. vii. p. 412; Günth. Col. Sn. p. 197; Jan, Icon. 36, iii. 3. Kurichane, lat. 25° S. (Smith). Cape, Port Elizabeth, Natal (B. M.)

16. *Lamprophis*, Fitz.

23 scales across the middle of the body, those of the vertebral series larger.	*aurora*.
23 scales across the middle of the body, equal.	*fiskii*.
19 scales across the middle of the body.	*rufulus*.

24. *Lamprophis aurora*, L.; Smith, Ill., App. p. 19; Dum. & Bibr. vii. p. 431; Günth. Col. Sn. p. 195. "Occurs throughout South Africa, but nowhere in abundance. In the Colony it is, from its moving much during the night, known, like *Aspidelaps lubricus*, by the name of 'Nacht Slang.'"—*Smith*. Cape, King William's Town, Orange River (B. M.)

25. *Lamprophis fiskii*, Blgr.; Boulenger, Proc. Zool. Soc. 1887. Touw's River.

26. *Lamprophis rufulus*, Licht.; Smith, Ill. pl. lviii.; Jan, Icon. 17, iv. 1. *Ablabes rufulus*, Günth. Col. Sn. p. 30. "This snake has an extensive range, being found in damp localities throughout the entire of South Africa. It is generally discovered in marshy

spots, and on the banks of rivers, and is occasionally observed actually in water trying to capture frogs, &c., which form its favourite food."—*Smith.* Cape, King William's Town, Natal (B. M.)

17. *Boodon*, D. & B.

27. *Boodon lineatus*, D. & B. *Lycodon geometricus* (non Schleg.), Smith, Ill. pl. xxii. *Boædon lineatum*, Dum. & Bibr. vii. p. 363; Günth. Col. Sn. p. 199. *Boædon capense*, Dum. & Bibr. vii. p. 364. *Boædon quadrilineatum*, Jan, Icon. 36, ii. 2 & 3. "Rarely seen in S. Africa; resorts to dry and arid situations."—*Smith.* Cape, King William's Town, Natal, Orange River, Damaraland (B. M.)

Black variety: *B. infernalis*, Günth. *l. c.* p. 199. Port Natal, Port Elizabeth, Damaraland (B. M.)

18. *Heterolepis*, Smith.

8 upper labials, 4th, 5th, and 6th entering the eye. - - -	*capensis.*
7 upper labials, 3rd and 4th entering the eye. - - -	*gueinzii.*

28. *Heterolepis capensis*, Smith, Ill. pl. lv. Eastern districts of the Cape Colony (Smith). Desideratum in the British Museum.

29. *Heterolepis gueinzii*, Peters, Mon. Berl. Ac. 1874, p. 163, pl. —, fig. 2. Port Natal. Likewise a B. M. desideratum.

19. *Leptodira*, Fitz.

7 upper labials, 3rd and 4th entering the eye; a single anterior temporal. - - - - - - - - - -	*punctata.*
8 upper labials, 3rd, 4th, and 5th entering the eye; a single anterior temporal. - - - - - - -	*rufescens.*
9 upper labials, 3rd, 4th, and 5th entering the eye; two superposed temporals behind the postoculars. - - - - -	*semiannulata.*

30. *Leptodira punctata*, Ptrs. *Crotaphopeltis punctata*, Peters, Mon. Berl. Ac. 1866, p. 93. S. Africa, no precise locality.

31. *Leptodira rufescens*, Gm. *Crotaphopeltis rufescens*, Smith, Ill., App. p. 18; Jan, Icon. 39, ii. 1. *Heterurus rufescens*, Dum. & Bibr. vii. p. 1170. *Leptodeira rufescens*, Günth. Col. Sn. p. 165. "Inhabits most parts of S. Africa, but specimens are most easily obtained near Cape Town and on the south-eastern coast."—*Smith.* Cape, Port Elizabeth, Natal (B. M.)

32. *Leptodira semiannulata*, Smith. *Telescopus semiannulatus*, Smith, Ill. pl. lxxii. Loc.? Not represented in the British Museum.

20. *Dasypeltis*, Wagl.

33. *Dasypeltis scabra*, L.; Smith, Ill., App. p. 20; Günth. Col. Sn. p. 142. *Rachiodon scaber*, Dum. & Bibr. viii. p. 491; Jan, Icon. 39, ii. 4. "Inhabits the more southern parts of Africa, and consumes with avidity the eggs of birds."—*Smith.* Cape (B. M.)

Variety, uniform brown above: *D. palmarum*, Leach; Günth. *l. c.* *D. inornatus*, Smith, pl. lxxiii. Port Natal (B. M.)

V. Elapidæ.

21. *Naia*, Laur.

34. *Naia haie*, L.; Smith, Ill. pls. xviii.—xxi.; Dum. & Bibr. vii. p. 1298; Günth. Col. Sn. p. 225; Jan, Icon. i. 2. Cobra de Capello. South African specimens are desiderata in the British Museum.

22. *Dendraspis*, Schleg.

35. *Dendraspis angusticeps*, Smith. *Naia angusticeps*, Smith, Ill. pl. lxx.; Dum. & Bibr. vii. p. 1301. *Dendraspis angusticeps*, Günth. Col. Sn. p. 238. "This species occurs about Natal and in the country to the eastward, towards Delagoa Bay."—*Smith.* South African specimens are desiderata in the British Museum.

23. *Sepedon*, Merr.

36. *Sepedon hæmachates*, Merr. *Naia hæmachates*, Smith, Ill. pl. xxxiv. *Sepedon hæmachates*, Dum. & Bibr. vii. p. 1259. *Aspidelaps hæmachates*, Jan, Icon. 44, vi. 4. "Ring Hals Slang" of the Cape colonists. "Specimens have been found in almost every district of South Africa which has yet been explored. It appears to prefer localities in which the soil is loose, sandy, and coated with brushwood."—*Smith.* Cape, Namaqualand (B. M.)

24. *Aspidelaps*, Fitz.

Frontal shield longer than broad; 3rd and 4th upper labials entering the eye.	*lubricus.*
Frontal not longer than broad; 4th upper labial entering the eye.	*scutatus.*

37. *Aspidelaps lubricus*, Merr.; Smith, Ill., App. p. 21; Jan, Icon. 44, vi. 2. *Elaps lubricus*, Dum. & Bibr. vii. p. 1218.

Cyrtophis scutatus (non Smith), Günth. Col. Sn. p. 227. "Nacht Slang" of the Cape colonists. "Inhabits South Africa, more particularly towards Cape Town."—*Smith.* Cape, Kaffraria (B. M.)

38. *Aspidelaps scutatus*, Smith. *Cyrtophis scutatus*, Smith, Ill., App. p. 22. *Aspidelaps scutatus*, Jan, Icon. 44, vi. 3. "Inhabits Kaffirland and the country towards Port Natal."—*Smith.* Natal (B. M.)

25. *Elaps*, Schn.

A. 15 scales across the body.

3rd upper labial much larger than first and second; belly yellowish with a black median band, or blackish with yellowish spots or transverse bars. - - - - - - - - - - - *hygiæ.*

The three anterior upper labials subequal; blackish above, with a yellowish vertebral streak, uniform yellowish inferiorly. - - - *dorsalis.*

B. 13 scales across the body. - - - - *sundevallii.*

39. *Elaps higiæ*, Shaw; Smith, Ill., App. p. 21; Dum. & Bibr. vii. p. 1213; Günth. Col. Sn. p. 232; Jan, Icon. 43, ii. 3. "Kouseband" of the Cape colonists. "Found in all parts of South Africa."—*Smith.* Cape (B. M.)

40. *Elaps dorsalis*, Smith, Ill., App. p. 21. "Inhabits Kaffirland, and the country towards Port Natal."—*Smith.* King William's Town (B. M.)

41. *Elaps sundevallii*, Smith, Ill. pl. lxvi. "Inhabits South Africa to the eastward of the Cape Colony."—*Smith.* Does not appear to have been rediscovered since the description was published by Smith from a specimen belonging to Sundevall, of Stockholm.

26. *Atractaspis*, Smith.

42. *Atractaspis irregularis*, Reinh. *A. bibronii*, Smith, Ill. pl. lxxi.; Jan, Icon. 43, iii. 2. *A. irregularis*, Günth. Col. Sn. p. 239; Jan, Icon. 43, iii. 1. "Inhabits the eastern districts of the Cape Colony."—*Smith.* Smith's original specimen is now in the British Museum.

27. *Causus*, Wagl.

43. *Causus rhombeatus*, Licht. *Sepedon rhombeatus*, Smith, Ill., App. p. 21. *Causus rhombeatus*, Dum. & Bibr. vii. p. 1263.

"Frequently found in the Cape Colony."—*Smith.* Port Natal, Port Elizabeth (B. M.)

VI. VIPERIDÆ.

28. *Vipera*, Laur.

A. Lower surface of tail with a well-developed double series of subcaudal shields, as in the innocuous snakes.
1. Nostrils directed upwards, their distance from the lip equalling the distance from the eye to the lip - - - - *arietans.*
2. Nostrils lateral.
11 or 12 shields border the upper lip on each side, the fourth being considerably larger than the others - - - - - - *atropos.*
13 subequal labial shields on each side; head thick and globular, nearly twice the diameter of the neck - - - - - - *atropoides.*
13 or 14 subequal labial shields on each side; head much longer than broad; coloration uniform yellowish brown - - - *inornata.*
B. Lower surface of tail with feebly differentiated, feebly-keeled scales.
No horn-like tubercle above the eye - - - - - - *schneideri.*
A horn-like erect tubercle above the eye - - - - - *caudalis.*
Two or more erect horn-like tubercles above the eye - - - *cornuta.*

44. *Vipera arietans*, Merr. *Echidna arietans*, Smith, Ill., App. p. 21; Dum. & Bibr. vii. p. 1425. *Vipera arietans*, Jan, Icon. 45, vi. 3 & 4. "Puff Adder" of the Cape colonists. "Has been observed in all the districts of S. Africa which have been visited by Europeans."—*Smith.* Cape, Natal (B. M.)

45. *Vipera atropos*, L. Smith, Ill. pl. lii.; Jan, Icon. 45, iv. 1 & 2. *Echidna atropos*, Dum. & Bibr. vii. p. 1432. "Berg Adder" of the colonists. "Has been found in every district of S. Africa."—*Smith.* Cape (B. M.)

46. *Vipera atropoides*, Smith, Ill. pl. liii. "The only specimen procured [which is now in the British Museum] was from the vicinity of a missionary institution about forty miles to the eastward of Cape Town."—*Smith.*

47. *Vipera inornata*, Smith. *Echidna inornata*, Smith, Ill. pl. iv. "This snake [now in the British Museum] was killed in the Sneeubergen, or Snow Mountains, which are situated immediately behind the village of Graaff Reynet."—*Smith.*

48. *Vipera schneideri*, Boettger, Ber. Senckenb. Ges. 1886, p. 8, pl. i. fig. 1. Angra Pequeña.

49. *Vipera caudalis*, Smith, Ill. pl. vii. *Cerastes ocellatus*,

Smith, pl. iv. (text). Restricted to dry sandy districts. Cape, Damaraland (B. M.)

50. *Vipera cornuta*, Daud. Smith, Ill. pl. xxxii. *Vipera lophophrys*, Smith, Ill. pl. xxxiii. *Cerastis lophophrys*, Dum. & Bibr. vii. p. 1444. "Hornsman" of the Cape colonists. Cape (B. M.)

NOTES ON THE SEAL AND WHALE FISHERY OF 1886.

By Thomas Southwell, F.Z.S.

We must go back many years in the history of the Seal and Whale Fishery before we shall find so disastrous a season in all respects as the past has been; certainly it is unparalleled in the history of the Dundee fishery: a season of great severity has resulted in poor catches, still poorer prices for produce, and in the loss of one ship at Newfoundland and four in Davis Straits. It is not likely, with the present prospects, that any of these will be replaced, and it is even doubtful whether all the vessels which returned from last season's fishing will repeat the venture in 1887; in addition to which there are rumours of a partial desertion of the northern fishing-grounds for the purpose of exploring the Polar seas of the Southern Hemisphere.

The first disaster occurred on March 27th, when the Dundee steamer 'Resolute' was crushed in the ice in Notre Dame Bay, her crew having barely time to save themselves by jumping on the ice, where they suffered intensely from cold and exposure, having to travel seventy miles over ice before they reached a place of safety; three of their number, at first believed to have been lost, were subsequently picked up by the sealer 'Hector,' and landed safely at St. John's. The 'Resolute,' at the time of her loss, had 20,000 Seals on board. Another Dundee vessel, the 'Aurora,' had a narrow escape. Four days after leaving St. John's she discovered the main pack of Seals, and had every prospect of securing a full cargo, but a gale of great violence coming on, which continued for several days, she was driven before its force a distance of about one hundred miles, ultimately to be stopped by an iceberg off Cape Bonavista, where she remained in a position of great danger from the falling ice. Soon after, a second iceberg floating down upon her crushed one of her boats, and injured the ship so much that she began to leak; all this time the weather was of great severity, and the snow and mist blinding. Ultimately the ice eased, to the intense relief of her crew, and with the loss of one of her men the 'Aurora' returned to St. John's to refit. On her second trip she secured 640 old Seals.

The total result, so far as the twenty-one British vessels which took part in the Newfoundland fishery were concerned, was one lost, two clean; and amongst the remaining eighteen vessels a take of 195,396 Seals (against 211,587 for nineteen British vessels last year); of these the 'Ranger' took 35,894, the 'Falcon' 24,768, the 'Wolf' 19,521, the 'Leopard' 15,954, and the 'Greenland' 15,000. Of the remaining thirteen vessels, the total catch was 84,259, or an average of 6481; the average of the whole eighteen being 10,855 Seals, the produce of which was worth about £18 10*s.* per ton.

Taking the Dundee portion of the above fleet alone, which consisted of six vessels, one—the 'Resolute'—as before said, was lost, and the remaining five vessels brought home only 41,606 Seals (as against 71,272 the previous season), or an average of 8321 each. It will thus be seen that for the whole of the Dundee vessels, and ten of the St. John's fleet, the voyage, so far, must have been a most unprofitable one, even if the price of produce had been much higher than it now is; practically only the five vessels enumerated as having taken 15,000 Seals and upwards made paying voyages.

The Greenland sealing has this season been an entire failure, not so much, perhaps, from the absence of Seals as from the severity of the weather, and the state of the ice preventing an approach to the breeding pack. The passage out was a fair one, and the Seals were found on April 2nd, in lat. 74° N., long. 2° E.; but the weather proved so tempestuous that it was not until the 7th they could be reached, and the strong gales had then broken up the ice into small patches, and thus dispersed the Seals. Three Scotch vessels only were present, the 'Erik,' 'Hope,' and 'Earl of Mar and Kellie' (the 'Eclipse' did not take part in the young sealing), and they captured about 4500 'white-coats;' there were also twenty-one Norwegians, who secured some 31,500 others, in addition to which there were also about 4000 old Seals killed, making a total of, say, 40,000 old and young Seals. In consequence of the lateness of the season the young Seals were in very fine condition, and probably sixteen days old, as the parents generally take to the ice about March 22nd. The old sealing, later in the season, was equally bad. The total number of old and young Seals brought in from the Greenland and Davis Straits fishery was 7964, against 32,302 in the season of 1885.

I regret that in my last year's notes by an error I stated that there were eighteen Scotch vessels present at the Greenland sealing: this was the total number both at Greenland and Newfoundland. I should have stated that ten Scotch vessels took part in the Greenland and Davis Straits sealing, capturing 26,448 Seals, and that the proceeds of 5852 other Seals were brought home by the 'Germania' from a station in the Cumberland Gulf.

At Newfoundland and Greenland together, the thirteen Scotch sealers last season killed 49,570 Seals (against 103,574 in the season of 1885); these, at 6*s.* per skin, would represent a sum of £14,871, and the yield of 582 tons of oil, at £20 per ton, a further sum of £11,640; gross total, £26,511, against an estimate in 1885 of £57,412, a sad falling off, which in this branch of the fishery must represent a considerable loss to those engaged in it.

In the article "Seal Fishery," in the 21st vol. of the 'Encyclopædia Britannica,' p. 582, are some remarks with regard to what is there termed the "Jan Mayen Seal Fishery," which are calculated to be very misleading. It is stated that the British, Norwegian, Swedes, Danes, and Germans, all take part in the fishery, and that the number of Seals taken by the British vessels "about equals that taken by all the others together." If by the "Jan Mayen fishery" the author means the capture of young Saddle Seals at the Greenland west ice, this is certainly not correct; the foreign vessels at present greatly outnumber the British, and the number of Seals taken by them is proportionately larger; it will be seen that in the season of 1886 the numbers of British and foreign vessels present were respectively three of the former and twenty-one of the latter, and for many years past the disparity has been almost equally great. The Norwegians, who did not commence sealing till 1845, now outnumber all the other nationalities. Previous to that time there were more Germans, Danes, and Dutch, than there are Norwegians at present. The author is also incorrect in stating that the Scotch steamers are chiefly manned by Shetlanders. It is usual for the whalers to complete their crews at Lerwick, and last season the 'Eclipse' added to her crew of forty men fifteen Shetlanders, bringing the number up to fifty-five, and this, I believe, is about the usual proportion. Again, although it is stated that a close time has been established in the "Jan Mayen fishery," the writer goes on to say that "the vessels make the ice from the 15th to the 20th March, and commence the chase in the destructive way already described." The way "already described" happily refers to what has since 1877 become a thing of the past; in that year the close time came into operation, and now, within an area included between the parallels of 67° and 75° N. latitude, and between the meridians of 5° East and 17° West longitude from the meridian of Greenwich, not a Seal is killed till April 3rd. That date is still believed by some to be too early, but this restriction has completely revolutionised the mode of sealing; the mother Seals are no longer killed without mercy when they come to suckle their young, and the latter left "to die in thousands of starvation." As a matter of fact, it is the young "white-coats" which are now so much valued. The German vessels made a business of sealing many years before the English took any decided part in it, the latter only picking up a few Seals occasionally; but about the commencement of the present century Seals begin to figure largely in the returns of the British ships. It was not, however, till the year 1840 that the port of Dundee first sent out ships to the Greenland sealing, but this date by no means coincides with the commencement of the Jan Mayen Seal fishery as stated by the writer in the 'Encyclopædia Britannica.'

The Davis Straits whaling voyage was a very disastrous one. On April 5th, during a most terrific gale, the 'Triune' was forced upon a reef in lat. 66 N., where she remained frozen up till the 18th, when she was released, but in steaming through the ice-floe she received a very severe nip, which ultimately resulted in the crew being compelled to abandon her off Scott's Island in 71 N. lat. on the 16th August. At the same time and place as the 'Triune,' the 'Jan Mayen' was also caught in the squeeze, and sank shortly afterwards. The 'Star' was likewise lost in Cumberland Gulf, making, with the 'Resolute' before mentioned, four Dundee vessels which fell victims to the "thick-ribbed ice" last season. Nor was this all, for the 'Catherine' of Peterhead, a sailing brig of 190 tons, after various adventures on reefs and rocks, was finally beached and abandoned on the 30th September in Cumberland Gulf. Fortunately the crews in all cases were rescued.

In the Davis Straits plenty of Whales are reported to have been seen both in the early and late fishing; but the weather was so bad, combined with heavy seas and ice floes of a very dangerous character, that fishing was impossible; and during the summer months, when the best fishing is usually met with, the young Whales which, as a rule, are then found in Lancaster Sound, although the ships were through Melville Bay in good time to meet them in passing, were altogether absent, having, it is conjectured, taken some other passage.

The Davis Straits and Cumberland Gulf vessels, ten in number, killed nineteen Whales. These are said to have yielded 380 tons of oil, and 290 cwt. of bone, giving an average of 20 tons of oil and 15 cwt. of bone each, a very high average for the Straits Whales, which is probably to some extent accounted for by the summer fishing of the young Whales being a failure, those taken being in consequence all adults. Of this I shall have something more to say presently.*

The Seal fishery offering no temptation for an early start, and consequent greater outlay on the voyage, Capt. Gray, of the 'Eclipse,' deferred his departure from Peterhead until April 20th, with the intention of devoting his energies to whaling and shooting old Seals; of the latter he obtained 700, and of the former 7. Of the incidents of this voyage some account has been contributed to these pages by Mr. Robert Gray; there is no need, therefore, for me to dwell upon this part of the subject. In the Greenland Seas the 'Eclipse' and 'Erik' from Peterhead, and the 'Pole Star' from Dundee, captured 15 Whales, yielding 88 tons of oil, and 80 cwt. of bone—the Whales averaging just over 5¾ tons of oil, and 5⅓ cwt. of bone. The 'Hope' and 'Aurora,' as also the 'Earl of Mar and Kellie,' which paid a short visit to the Greenland whaling, were unsuccessful. Fourteen of the above Whales were taken early in the season, and in about the same locality, the remarkable feature about them being their small size.

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* The disparity between the quantities of bone and oil as stated above is certainly too great; there is always a remarkably constant proportion of one cwt. of bone to each ton of oil, and this holds good with Whales of all sizes. The 'Traveller' brought home from Cumberland Gulf some Whale oil which had been left out last season; but in addition to this I think there must be some inaccuracy in the reported quantity of oil; possibly some of the White Whale oil has been accidentally entered as Whale oil.

The relative size of the Whales taken in Davis Straits and Cumberland Gulf, compared with those usually taken in Greenland, has in the past season been quite reversed. A large number of Davis Straits and Cumberland Gulf Whales, taken over a period of years, produced an average of 9½ cwt. of bone each; whereas the Greenland Whales, captured during the same period, yielded 11 cwt. each; but in the past season the averages have been 15 and 5⅓ cwt. respectively.*

This may at first sight appear very remarkable, but it is quite intelligible to those acquainted with the habits and seasonal distribution of these creatures. We have seen that the Straits fishermen, owing to circumstances of weather and ice, missed the young Whales, which would have reduced their average; whereas the Greenland fishermen likewise, from force of circumstances, could only get amongst young Whales early in the season; and later on, owing in a great measure to the ice being so closely packed and its edge so far west, they missed the south fishing altogether. But this is not all: from long experience of the habits and migration of the Whales, the regularity of which is remarkable, the Whalers know precisely where they should be found, under favourable circumstances, at certain definite periods; and not only so, but also the age and size which may be expected. I am not at liberty to enter more fully into this subject, fearing to commit a breach of confidence, as it is the application of accumulated experience on such points which enables one man to succeed in capturing Whales when a less accurate observer would fail; but I may add—to show that the migratory habits of the Whales have not changed—that the celebrated capture of forty-four Whales, by Capt. Suttar, of the 'Resolution,' in 1814, was effected in the same latitude as produced the Greenland Whales of the past season. Capt. Suttar's average was 5 tons 13 cwts.; and fourteen of the Greenland Whales last season, taken by two vessels fishing together in the same latitude as Suttar's, gave precisely the same average.

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* As before stated, the yield of bone is more reliable than that of the oil for purposes of comparison; I therefore prefer to give that of the bone only, but each cwt. of the latter may be taken as representing an equivalent of one ton of the former.

It is difficult to say what is the value of commodities which are hardly marketable; but at £20 per ton the 477 tons of oil brought home by the Dundee and Peterhead vessels would be worth £9540, and the 18½ tons of bone, at say £1100 per ton all round,* another £20,350, or a total of £29,890, against £31,800 in the season of 1885.

There has been a further considerable falling off in the British Bottle-nose fishery, only 23 Whales, yielding 22 tons of oil, having been brought in against 84 killed in 1885; but I am informed that the Norwegians have in the past season killed the enormous number of 1600 or 1700 of these creatures, which has so flooded the markets of London and Glasgow with their oil that it has been sold as low as £17 or £18 per ton,—a circumstance which will account for the neglect of this branch of the fishery by the Scotch vessels, the owners of which not many years ago realised £50 or £60 per ton for the same oil.

Some of the vessels brought home very miscellaneous cargoes—1033 White Whales, 320 Walruses, and many Narwhals and Bears—scarcity of "big game," I presume, rendering the pursuit of such small deer the more keen.

During his voyage to the Greenland fishery, when in lat. 70° N. 16° W., or about half-way between Jan Mayen and Greenland, Capt. Fairweather, of the 'Aurora,' reports a singular phenomenon. On August 16th, about mid-day, his vessel received a sudden shock, caused by what he considers must have been an earth- (or sea-) quake. The "sensations," he says, "felt by those on board were as if the ship were moving over a rocky bottom with great velocity." The officers and crew immediately rushed on deck, thinking a boiler had burst, or that the ship had gone aground, but the boilers were all right, and the lead failed to find bottom at 100 fathoms. The weather was foggy, with slight rain and wind from E.S.E.; no upheaval of the water was noticed, the sea being unusually calm. About two hours later, a second but much lighter shock was experienced, which, however, only caused the vessel to tremble.

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* Some "size-bone" (*i.e.*, bone the slips of which are six feet and upwards in length) has recently been sold at £1550 per ton; but as the "undersize" bone produces only half the price of the "size," the price for the average is largely reduced. This must have been particularly the case in the past season, many of the Whales being very small, and the proportion of undersize bone being consequently unusually large.

NOTES AND QUERIES.

MAMMALIA.

Change of Habits in the Brown Rat.—The way in which animals change their habits and mode of life in adapting themselves to new or altered conditions of existence is very remarkable. In some cases doubtless the change is so gradual that it is not detected for a long time, but in others a divergence of habit under exceptional circumstances is so marked that it at once strikes the observer as noteworthy. Some years ago the Rev. J. S. Whitmee, then resident in the Samoan Islands, noticed a remarkable change of habits in that curious bird the so-called "Little Dodo," *Didunculus strigirostris,* which, from being almost entirely terrestrial in its habits, and breeding also on the ground, became gradually arboreal, roosting and nesting in trees, to escape the destruction which threatened it from attacks by cats, dogs, rats, and pigs, which had been introduced by the colonists (*cf.* Proc. Zool. Soc. 1875, p. 495). The Rat itself, so active a destroyer of life, has likewise had to alter its habits continually in its struggle for existence under adverse conditions in New Zealand. Capt. Johnstone, of Te Haroto, Raglan, New Zealand, referring to *Mus decumanus,* in a letter to Capt. Hutton, subsequently communicated to the Auckland Institute (Proc. N. Z. Inst. 1870, p. 47), writes as follows:—"At this season of the year [June] there is a sort of annual migration of Rats, where there are uncultivated lands in the neighbourhood of houses. This year the migration is excessive, both in the country and in the village of Raglan. The habits of the Rat have greatly changed since its introduction. It is amphibious. At low water they go to eat shell-fish on a rock near here, and when the tide rises swim back to the land. They have almost extirpated the delicious little crayfish (*Paranephrops*), which twenty years ago were, as I well remember, plentiful in my creek. Even the fresh-water mussels (*Unio*) are not safe from them, as they dive for them and open them on the bank. The climate is wet and the ground hard, so instead of burrows they make nests in trees and hedges. Some time ago Mr. J. Graham, of Raglan, showed me a perfect 'rattery' in a thorn-hedge in the village. There were from fifteen to twenty large nests, into which it was necessary to insert a pitchfork to eject the occupants, in order to show that they were not birds' nests." The habit of feeding upon Crustacea is confirmed by another observer in New Zealand, who writes:—"Wild Ducks were particularly numerous in this district (Lake Taupo, North Island) on my arrival here: you saw them by dozens—you hardly see them now by twos. I have no doubt we owe this to the Norway Rat. There is a place on the Waikato River, some twenty miles below Taupo, where the chiefs occasionally assembled to act out two important matters—to discuss politics and eat *kouras* (crayfish). A few years after the Norway Rat fully appeared, the kouras were no longer plentiful, and as the New Testament made Maori politics rather unnecessary, the usage of meeting no longer exists. The natives assured me that the Norway Rat caught the crayfish by diving. Rowing up the rivers you see the little deposits of shells. Upon enquiry I found they were the selections of the Norway Rat, who, by diving for these fresh-water *pipis*, provide a *kinaki* (relish) for their vegetable suppers." I have elsewhere commented upon the observed fact that Rats will greedily devour snails, and in this way may do some good in gardens where snails are numerous ('Rambles in search of Shells,' 1875, pp. 73, 74). In the case referred to, however, they were apparently impelled to this change of diet from necessity rather than from choice, the Rats in question belonging to a colony which had taken up their quarters in some new houses while in course of erection, where there were no larders to visit. They were observed to climb the hollyhocks in the garden, clear off several snails, bring them down in one paw, like an armful, and run with them on three legs to their holes.—J. E. HARTING.

Marten Cat in Breconshire.—This animal is so rare in Wales at the present time that it may be worth while noting that one was seen in a large wood near this town in September last. Attention was drawn to it by the noise made by five or six Jays, who were evidently mobbing something, and my informant, who got within twenty yards of it, described it so minutely to me as to leave no doubt in my mind as to its identity. In past years the Marten was common here, and I know of four stuffed specimens killed in this county within the last thirty years, and doubtless many others have been unrecorded. I have also the very much torn skin of a Marten killed some twenty years by the late Mr. Gwynne Vaughan's hounds near Llanwrtyd, in this county. The old rough Welsh hound hunts it with great keenness and determination, and in former years it was its legitimate quarry.—E. CAMBRIDGE PHILLIPS (Brecon, S. Wales).

Common Rorqual at Skegness.—Seeing the usual announcement of a "Greenland Whale" having been stranded at Skegness on April 3rd, I wrote to Mr. Storr of that town, who was mainly instrumental in its capture, and from his replies, thinking it possible the animal might be *Balænoptera borealis*, I took an early opportunity of visiting Skegness, and was somewhat disappointed at seeing on the beach a young female of the Common Rorqual or "Razorback," *Balænoptera musculus*. The animal measured 47 ft. in length, and the only remarkable feature about it was the unusually light colour of the baleen, which showed much less of the characteristic slate colour veined with darker and lighter shades of the same than in any specimen of this species which I have seen. This may have been owing either to the juvenility of the animal, which was little more than two-thirds grown, or it may have been sexual, or even the result of individual variation. There seems to have been the usual misunderstanding with the authorities, who claimed the whale on behalf of the Crown, but it was eventually handed over to its captors, who, after exhibiting it during the Easter holidays, sold it by auction for thirty guineas.—T. Southwell (Norwich).

[We learn from another correspondent, Mr. Degen, who personally examined it, that, being half buried in soft sand and ooze, it was impossible to take all the measurements that were desirable. He could only ascertain that the extreme length was 47 ft., the length from centre of dorsal fin to end of tail 13 ft., width of tail 8 ft., and circumference at dorsal fin 11 ft. 8 in. He arrived at the same conclusion as did Mr. Southwell, namely, that it was an immature female of *Balænoptera musculus*.—Ed.]

The West India Seal.—It will probably be of interest to the zoological portion of your readers to learn of the re-discovery—or the full discovery—of the West Indian Seal, *Monachus tropicalis*. The history of this pinniped is in brief as follows:—It was noticed by Columbus in his account of his second voyage (1494) as having been found in some numbers on the rocky isle of Alta Vela, off the southern shore of Hispaniola, where his sailors killed eight of them for food. Later—in 1675—Dampier found this Seal in abundance on the Alacram reefs, about eighty miles north of Yucatan. At that time it was killed there in great numbers for its oil. The Seal then remained unnoticed for over a century and a half, having no place whatever in the writings of zoologists until 1843. Then Mr. Richard Hill published an account of it in the 'Jamaica Almanac,' calling it the Pedro Seal, from the Pedro Keys, some sixty miles south of Kingston, Jamaica, where he had found it. A few years later Mr. P. H. Gosse obtained an imperfect skin (without skull), which he sent to the British Museum, where it was described by Dr. Gray in the 'Proceedings of the Zoological Society of London,' 1849. Dr. Gray gave it then no name, probably by reason of its imperfect characters. Later—in 1850—('Catalogue of Mammals in the British Museum') he described the same specimen as *Phoca tropicalis*, and afterwards ('Catalogue of Seals and Whales,' 1866) as *Monachus tropicalis*. But so imperfect was the specimen on which the description was founded, and the animal itself was so little known, that even its generic relations were in doubt, and its reference to the genus *Monachus* was considered provisional. From thence on to the present, rumours of the existence of this Seal have been not infrequent, but nothing seemed trustworthy and positive, and no specimens were obtained, if we except a young skin, without bones or skull, which came from Cuba to the National Museum at Washington, in 1884, without any indication as to locality. It has long seemed to the writer, as doubtless to many others, that the certain presence in our [*i. e.* American] waters of so important a mammal lying *perdu* in regions which our naturalist collectors are yearly visiting, was the opprobrium of American zoologists. We made inquiries and collected notes from many sources, which showed clearly that this Seal existed at isolated points--on small islands and keys—not only in the Caribbean and among the Bahamas, but also in the Gulf of Mexico. Last summer, while on a visit to the western shore of the Gulf of Mexico, we were so fortunate as to "locate" this seal with much certainty. This was upon the Triangles (Los Triangulos), three little keys, hardly above the water-level at high tide, and lying some 100 miles north-west off the Campeachy coast, in latitude N. 20° 50′, and longitude W. 92° 10′. Following this clue, my son, Mr. Henry L. Ward, last December visited the Triangles in company with Senor F. Ferrari Perez, naturalist of the Mexican Geographical and Exploring Expedition. His hunt was highly successful, and he has during the present month returned with nearly twenty specimens—skeletons and skins of all ages, from a suckling to the fully adult male, seven feet in length. This ample material has just been carefully studied by Prof. J. A. Allen, the well-known zoologist, and author of a 'Monograph of North American Pinnipeds.' Prof. Allen has given a preliminary notice of the specimens in 'Science,' January 14, 1887, and promises an elaborate account, with plates, in an early issue of the Bulletin of the American Museum of Natural History, New York. It is a fact of rather peculiar interest that this, the first large mammal ever discovered in America, should, by the strange mishaps of natural-history collecting, be the very last one to become known satisfactorily to science.—HENRY A. WARD (Rochester, New York).—*In 'Nature.'*

[A second communication on the subject, from Mr. Allen, appeared in 'Science,' Jan. 21, 1887. Mr. Ward is mistaken in supposing that the skin of the Seal, which came from Cuba to the National Museum at Washington in October, 1883 (not 1884, as above stated), was without bones or skull. It contained the skull and the bones of the fore and hind flippers, and these have been described (with three figures of the skull) by Messrs. Trew and Lucas in the Smithsonian Report for 1884, pt. ii. pp. 331-335.—ED.]

BIRDS.

Reported occurrence of Emberiza melanocephala in Scotland.—When visiting the Crystal Palace Bird Show on February 15th, I was surprised to find that, in Class 66, the first prize had been won by No. 1317, a male Black-headed Bunting, *Emberiza melanocephala*, in winter dress. On enquiry its owner, Mr. T. Crossley, of Kendal, wrote to me at some length regarding the bird, which "was caught near Dumfermline, on or about the 5th of November last, while flying in company with some Snow Buntings." Mr. Crossley subsequently informed me that he purchased the bird from a dealer while on a visit to Scotland on the 3rd of January. Mr. Crossley amusingly maintains that his specimen is an immature Ortolan. He has no doubt as to its capture as above stated.—H. A. Macpherson.

[See a note on the occurrence of this species in Nottinghamshire (Zool. 1886, p. 73), and its previous occurrence near Brighton (Ibis, 1869, p. 128). Since described and figured in the 4th edition of Yarrell's 'British Birds,' vol. ii. p. 64.—Ed.).

Albino Birds in Co. Wicklow.—Mr. J. R. Fitzgerald's note on albino birds (p. 110) reminds me of some curious albinos which have occurred about here. Two, a Jackdaw and a Blackbird, are in the possession of Mr. D. M'Kellar. The Jackdaw is of an uniform creamy white, except the top of the head, which is grey. It is a young bird of the first year, and was shot near Carnew, in December, 1883. It came from a nest in one of the houses of that village, and had the white plumage from a nestling, having been frequently seen before it was shot. The albino type is, I think, not so common among Jackdaws as among many other species. The Blackbird is a very curious and beautiful specimen, white, lightly tinged with shades of buff and pale brown. It was shot near Shillelagh in February, 1886. In November last, on Slievebuidhe Hill, a Magpie was seen which was all white, except a black collar round the neck, extending into a large patch on the shoulders, and some black spots on the wings. It was in company with two other Magpies of the ordinary type. Some years ago a white-winged Wren frequented the roadside near Park; and a cream-coloured Sparrow was seen in the village of Shillelagh.—Allan Ellison (Shillelagh, Co. Wicklow).

Wood Pigeons casting up Pellets.—When hawking in Cambridgeshire, on December 15th, I went from the open land through a wood frequented (at that season) by hundreds of Wood Pigeons. Among their droppings I saw some oval-shaped "castings," about an inch in length. I have noted this in the Shrikes, Rooks, and Swallows, but never in this form in the Pigeon. I am aware of the manner they feed their young, but

I must say I was ignorant of the fact of Pigeons ejecting castings such as I found composed of husks of barley and beech-nuts, grass, or clover, and small stones.—T. J. Mann (The Grange, Bishop's Stortford).

Blackbird laying in Thrush's Nest.—Whilst rambling over the Sewage Farm, during April last, I observed a Blackbird fly from a holly-bush, and, thinking it might have a nest, I went to see, and to my great surprise found that the Blackbird had laid four eggs in a Thrush's nest, which I suppose the Thrush must have deserted. On my telling Mr. Thomas, who owns the adjoining land, of the occurrence, he said that a similar case was observed by one of his sons near the same place during the previous year. Mr. Wm. Storey tells me that an instance of the above has come under his notice in Nidderdale.—F. R. Fitzgerald (Harrogate).

The Ptarmigan in South-West Scotland.—The remarks of Mr. Service regarding local specimens of *Lagopus mutus* in the Museum at Dumfries remind me that one or more specimens exist in the Carlisle Museum. I therefore wrote to Mr. W. Duckworth, suggesting that the Carlisle birds were probably from Dumfriesshire, and asking him to refer to the old Museum Catalogue, with a view, if possible, to trace their history. This he has kindly done, and finds that three specimens of *L. mutus* (two in summer and one in winter dress) were included in a series of birds presented many years ago by Mr. J. D. Murray, of Murraythwaite, Dumfriesshire. In all probability these were local birds: at least the presumption is favoured by the facts which Mr. Service has recently set forth in connection with his own district.—H. A. Macpherson.

Woodcock and Pheasant laying in the same Nest.—On the 12th April last I was taken to see a Woodcock's nest, about two miles from my house. There had been four eggs, but one was broken to pieces, and another had a hole in it. In the same nest with these were two Pheasant's eggs. The Woodcock's eggs had been laid some time, but were only slightly incubated. I suppose the Pheasant had turned the Woodcock out, but the keeper stated that two days afterwards he saw the Woodcock sitting on the two Pheasant's eggs. From this it would seem that the Pheasant had deserted and the Woodcock had gone back to the nest. On April 16th the two eggs were found to have been sucked by a Jay.—F. H. Birley (Dorman's Land, East Grinstead).

House Martins nesting in October.—A pair of Martins, *Chelidon urbica*, built their nest at the Harrogate Hotel, Starbeck, and successfully reared their young, in the latter end of October, 1884. The old birds were observed feeding their young during a blinding snow-storm. Last year Mr. William Storey, of Pateley, observed on October 8th a nest of the House Martin containing four young. The last Swallows observed in this district (so far as I am aware) was on October 25th, when Mr. Rowling saw one in High Harrogate, and I observed three in Low Harrogate.—F. R. Fitzgerald (Harrogate).

The Green-backed Porphyrio (Porphyrio chloronotus).—I should be much obliged if any correspondent, who may happen to know its whereabouts, will say where a Porphyrio, shot at Grange in Furness, Lancashire, on September 25th, 1876, now is. It was recorded in 'The Zoologist' by Mr. Harting (1877, p. 228), and by Mr. E. T. Baldwin, p. 381. Robert Allen, the keeper who shot it, died in America last May, and it is possible that he took the bird to America with him, but it is much more likely, I think, that he sold it to some collector before crossing the Atlantic. About ten days before this bird was killed a Green-backed Porphyrio, showing no trace of confinement, and now in Mr. J. G. Millais's collection, was shot at Errol, in Perthshire (Drummond Hay, 'Scottish Naturalist,' 1877, p. 37); while about fifteen days afterwards a third was killed in Norfolk (Zool. 1877, pp. 96, 228). These facts point to wild migrants, and not to prisoners escaped from any aviary, especially as it was just the migratory season, and the three localities are so far apart, assuming that the Lancashire bird was the green-backed species, which is what I wish to ascertain. Unfortunately that cannot now be proved, unless the specimen can be examined. Two of the witnesses who saw it think its back was green, and two others think it was blue. The Green-backed Porphyrio apparently has a good claim to be considered a visitant to the South of Enrope. Mr. Dresser says, on the authority of Baron von Müller, that six were caught at once in the South of France ('Birds of Europe,' vol. vii. p. 303); and I learn from Prof. Giglioli that in the autumn of 1865 four were taken at Messina, and that, including these, there are twelve well-authenticated instances of its capture in Italy, Sicily, and Sardinia. Of some of these he has given particulars ('The Ibis,' 1881, p. 211), but does not suggest that they may have escaped from confinement.—J. H. Gurney, Jun. (Keswick Hall, Norwich).

White-eyed Pochard and Bewick's Swan in Norfolk.—An adult male White-eyed Pochard (*Anas nyroca*) was shot at Potter Heigham on Dec. 29th ult.; it was flying singly down the river. Three Bewick Swans were shot here (at Heigham) last winter.—M. C. H. Bird (West Rudham, Swaffham, Norfolk).

The Sheldrake or "Bar-goose" on the Essex Coast.—This bird is still called "Bar-goose" by Essex shore-shooters and punt-gunners. It appears to be a late breeder. One killed off Canvey Island a few years ago on May 9th had no down off the breast, although the feathers there were dirty, as if she had been burrowing, and the most fully-developed egg in the ovary was not so large as a pea. I have not heard the term "Bargander" applied to the male, but both sexes are indiscriminately spoken of in Essex as "Bar-geese."—M. C. H. BIRD (West Rudham, Swaffham, Norfolk).

Harlequin Duck on the Northumbrian Coast.—The editorial note (p. 159) under a notice of the exhibition of a Harlequin Duck before the Zoological Society by Mr. H. Saunders has a tendency to mislead, as any one referring to that notice would naturally conclude that the bird exhibited was the Rev. Julian Tuck's specimen, which was not the case. It was the companion bird which I had received, and which is now in my collection. To obviate any confusion which might arise at a future date in tracing the destination of the two specimens which were obtained, I should feel obliged if you will allow me to state that I possess the specimen which was exhibited by Mr. H. Saunders.—ROBERT W. CHASE (Edgbaston).

It may be well to point out that the young Harlequin drake exhibited by Mr. Saunders at the second March meeting of the Zoological Society (Zool. p. 159) was not my specimen recorded on p. 70, but its companion in misfortune. The two must, I suppose, be "bracketed second" as British examples. I forwarded the body of the one I received to Professor Newton, and at his request the trachea has been prepared for the Cambridge Museum.—JULIAN TUCK (St. Mary's, Bucknall, Stoke-on-Trent).

Paired Varieties of the Jackdaw.—A pair of Jackdaws are at present nesting in one of the old trees close to my house. I see them frequently on the lawn and in the field near. Both these birds are exactly alike, and have the whole of the wings and tail of a dull mottled yellowish brown colour, much like that of a hen Pheasant. The remarkable point in this is that both the pair should thus vary. Probably they are the produce of some one brood of a former season?—O. P. CAMBRIDGE (Bloxworth, near Blandford).

Black Redstart in Co. Waterford.—I have to record the occurrence here of a young male of this species on the 4th November, 1886. The specimens of this bird captured in Ireland have, I believe, occurred on the sea coast, or at a short distance inland. Coolfin is about ten miles from the nearest sea. Like the bird mentioned by Lord Clermont (Zool. 1884, p. 78), this little straggler was engaged in capturing flies at my bed-room window.—WILLIAM W. FLEMYNG (Coolfin House, Portlaw, Co. Waterford).

FISHES.

Cyclopterus lumpus at Scilly.—I have received (April 12th) from St. Mary's, Scilly, a Lumpsucker, *Cyclopterus lumpus*. It is a male of unusual size, being as large as the ordinary female. The belly and lower sides are bright crimson, the back is of the usual dull leaden blue; but the remarkable thing about the fish is its sucker. Instead of being attached to the pectorals it was distinctly detached, and (although the fish was quite fresh when it was brought to me) the sucker was hard and apparently useless for the purpose of adherence. The fish being in good condition, the state of the sucker could not be attributed to disease. It may possibly have been the result of age, but I have seen the male of this species so rarely that on this point I am not able to offer an opinion. Since writing the above, another very large male Lumpsucker has been taken (April 14th); this time in Penzance Bay in a trammel, in about twelve fathoms of water. It measures sixteen inches in length, and has the same peculiarity about the sucker which I noted in the other. It was alive when I received it.—Thomas Cornish (Penzance).

INSECTS.

Scarcity of the Black-veined White.—In an article in the 'Entomologist's Monthly Magazine' for March, Mr. Herbert Goss raises the question whether *Aporia cratægi* is dying out in this country. At one time this butterfly was common in Kent, Sussex, Hampshire, Huntingdonshire, Northamptonshire, Herefordshire, Monmouthshire, and Glamorganshire. Now it has disappeared, apparently, from all these counties. Mr. Goss does not think that this can be attributed to the rapacity of collectors, and he holds that it can be accounted for only in some localities by cultivation and drainage. It seems to him more probable that the extreme acarcity or total extinction of the Black-veined White may be due to a succession of wet ungenial summers and mild winters.

SCIENTIFIC SOCIETIES.

Zoological Society of London.

April 5, 1887.—Prof. W. H. Flower, LL.D., F.R.S., President, in the chair.

The Secretary read a report on the additions that had been made to the Society's Menagerie during the month of March, 1887, and called special attention to two Long-tailed Grass-Finches, *Poëphila acuticauda*, from N.W. Australia, presented by Mr. Walter Burton; and to a Fisk's Snake, *Boodon fiskii*, and a Narrow-headed Toad, *Bufo angusticeps*, from South Africa, presented by the Rev. G. H. R. Fisk.

Mr. F. Day exhibited and made remarks on a specimen of a Mediterranean fish, *Scorpæna scrofa*, taken by a trawler off Brixham early in March last, and new to the British Fauna.

Mr. J. H. Leech exhibited some specimens of new Butterflies from

Japan and Corea, and gave a short account of his recent journeys to those countries in quest of Lepidoptera.

The Secretary read a letter addressed to him by the Rev. G. H. R. Fisk, of the Cape Colony, respecting the killing and eating, by a Shrew, of a young venomous Snake, *Sepedon hæmachates.*

Prof. Flower communicated, on behalf of Messrs. J. H. Scott and T. Jeffery Parker, of the University of Otago, New Zealand, a paper containing notes on a specimen of a young female *Ziphius*, which was cast ashore alive at Warrington, north of Dunedin, New Zealand, in November, 1884.

Mr. Richard S. Wray read a paper on the morphology of the wings of birds, in which a description was given of a typical wing, and the main modifications which are found in other forms of wings were pointed out. One of the principal points adverted to was the absence, in nearly half the class of birds, of the fifth cubital remex, its coverts only being developed. The peculiar structure of the wings in the *Ratitæ* and the *Sphenisci* was also commented upon.

A communication was read from the Rev. H. S. Gorham on the classification of the Coleoptera of the division *Languriides.* The author pointed out the characters which, in his opinion, were available for the systematic arrangement of this family of Coleoptera, and for its division into genera. The subject had hitherto not received the attention it deserved, and several errors had gained currency, owing to the hasty and insufficient way in which the structure of these insects had been examined. He added an analytical table of about forty genera, many of those proposed being new. Further notice of the American genera would soon appear in Messrs. Godman and Salvin's 'Biologia Centrali-Americana.'

April 19, 1887.—OSBERT SALVIN, Esq., F.R.S., Vice-President, in the chair.

The Secretary called attention to a set of eleven photographs representing the principal objects of Natural History collected by the celebrated traveller Prejevalski during his four expeditions into Central Asia, and to an accompanying Catalogue of them which had been presented to the Society's Library by Dr. A. Strauch, of the Imperial Museum, St. Petersburg.

Mr. T. D. A. Cockerell exhibited and made remarks on some specimens of rare British Slugs taken at Isleworth, Middlesex.

The Secretary read some extracts from a letter addressed to him by Mr. A. A. C. Souef, giving an account of a successful attempt to keep the Duck-billed *Platypus*, or Water-Mole, alive in captivity in the Zoological Gardens at Melbourne.

Mr. J. Bland Sutton exhibited some specimens of diseased structures taken from Mammals that had died in the Society's Gardens, and made comments thereon. He also read a paper on the singular arm-glands met with in various species of the family *Lemuridæ*.

Mr. F. E. Beddard read a paper on the anatomy of Earthworms, being a further contribution to his researches on that subject. The present paper treated of the structure of *Endrilus sylvicola*, the reproductive organs of *Acanthodrilus*, and the genital setæ of *Perichæta houlleti*.

A communication was read from Mr. A. D. Bartlett, Superintendent of the Society's Gardens, containing remarks upon the mode of moulting of the Great Bird of Paradise, *Paradisea apoda*, as observed in a captive specimen.

A communication was read from Mr. J. Douglas Ogilby, of the Australian Museum, Sydney, containing the description of a rare Australian fish, *Girella cyanea*. A second paper by Mr. Ogilby contained the description of an undescribed fish of the genus *Prionurus*, obtained in Port Jackson, which was proposed to be called *P. maculatus*.—P. L. SCLATER, *Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON.

April 6, 1887.—Dr. DAVID SHARP, M.B., F.Z.S., President, in the chair.

Mr. Francis Galton, M.A., F.R.S., of 42, Rutland Gate, S.W.; Mr. John Henry Leech, B.A., F.L.S., of 10, Hyde Park Terrace, W.; and Mr. George S. Parkinson, of Percy Cross, Fulham, S.W., were elected Fellows.

Mr. Samuel Stevens exhibited specimens of *Arctia mendica*, collected in the county of Cork, in Ireland, by Mr. M'Dowall, of Manchester. The peculiarity of the Cork form of the species is that the majority of the males are as white as the female of the English form; and although smoky-coloured specimens occur intermediate between the Irish and English forms, the typical black or English form appears to be unknown in Cork.

Mr. M'Lachlan exhibited a zinc box used by anglers for the purpose of keeping living flies in, which he thought might be adapted to practical entomological use in the field.

Mr. George T. Porritt exhibited a large number of specimens of *Hybernia progemmaria*, bred from moths collected at Huddersfield last spring. All the females and a large proportion of the males were of the dark variety *fuscata*, which formerly was almost unknown in Yorkshire, but which now seemed likely to replace the paler and original type.

Mr. Jenner Weir and Lord Walsingham both remarked that the number of melanic forms appeared to be on the increase in the north, and suggested explanations of the probable causes of such increase.

Mr. Gervase F. Mathew, R.N., exhibited several new species of Rhopalocera taken by him in the Solomon Islands during the visits to those islands of H.M.S. 'Espiègle' in 1882 and 1883. Amongst the specimens exhibited were species of *Euplœa*, *Mycalesis*, *Messarus*, *Rhinopalpa*, *Cyrestis*, *Diadema*, *Parthenos*, *Lampides*, *Sithon*, *Pieris*, *Papilio*, &c.

Mr. E. B. Poulton exhibited a large and hairy lepidopterous larva—apparently of a *Bombyx*—brought from Celebes by Dr. Hickson, and made remarks on the urticating properties of the hairs of the species, which were said by the natives to produce symptoms similar to those of erysipelas if the larva was handled.

Lord Walsingham, Mr. M'Lachlan, Dr. F. A. Dixey, Mr. Jenner Weir, Dr. Sharp, Mr. Slater, and Mr. Poulton took part in a discussion as to whether urtication was due to the mechanical action of the hairs in the skin, or to the presence of formic acid, or some other irritant poison, in glands at the base of the hairs. There appeared to be no doubt that in some species the irritation caused by handling them was merely due to the mechanical action of the hairs.

Mr. P. Crowley exhibited a collection of Lepidoptera recently received from West Africa, including specimens of several new or undescribed species of *Mylothris*, *Diadema*, *Harma*, *Rhomaleosoma*, &c.

Mr. H. Goss reported the capture by Mr. G. D. Tait, at Oporto, in September last, of a specimen of *Anosia Plexippus*, and remarked that, although some twenty specimens had been caught in the South of England, only two specimens had been previously recorded from the continent of Europe.

Lord Walsingham read a paper entitled "A Revision of the Genera *Acrolophus* (Poey) and *Anaphora* (Clem.)"; and he exhibited about twenty new species of these and allied genera. Mr. Stainton made some remarks on the genus *Anaphora*, and said he was glad Lord Walsingham was working at it and its allies. The paper was further discussed by Mr. M'Lachlan, Mr. Champion, and Dr. Sharp.

Mr. Poulton read "Notes in 1886 on Lepidopterous Larvæ, &c." In the discussion which ensued, Lord Walsingham referred at some length to instances of protective resemblance in larvæ, and alluded to the existence in certain species, especially of the genus *Melitæa*, of prothoracic glands. Further instances of protective resemblance were cited by Mr. Jenner Weir.

Dr. F. A. Dixey remarked on the extraordinary powers of contraction which appeared to be possessed by the retractor muscle of the flagellum in *D. vinula*, and enquired whether any corresponding peculiarities of minute structure had been observed in it. The discussion was continued by Mr. Gervase Mathew, Mr. W. White, Dr. Sharp, Mr. Porritt, and others.—H. Goss, *Hon. Secretary*.

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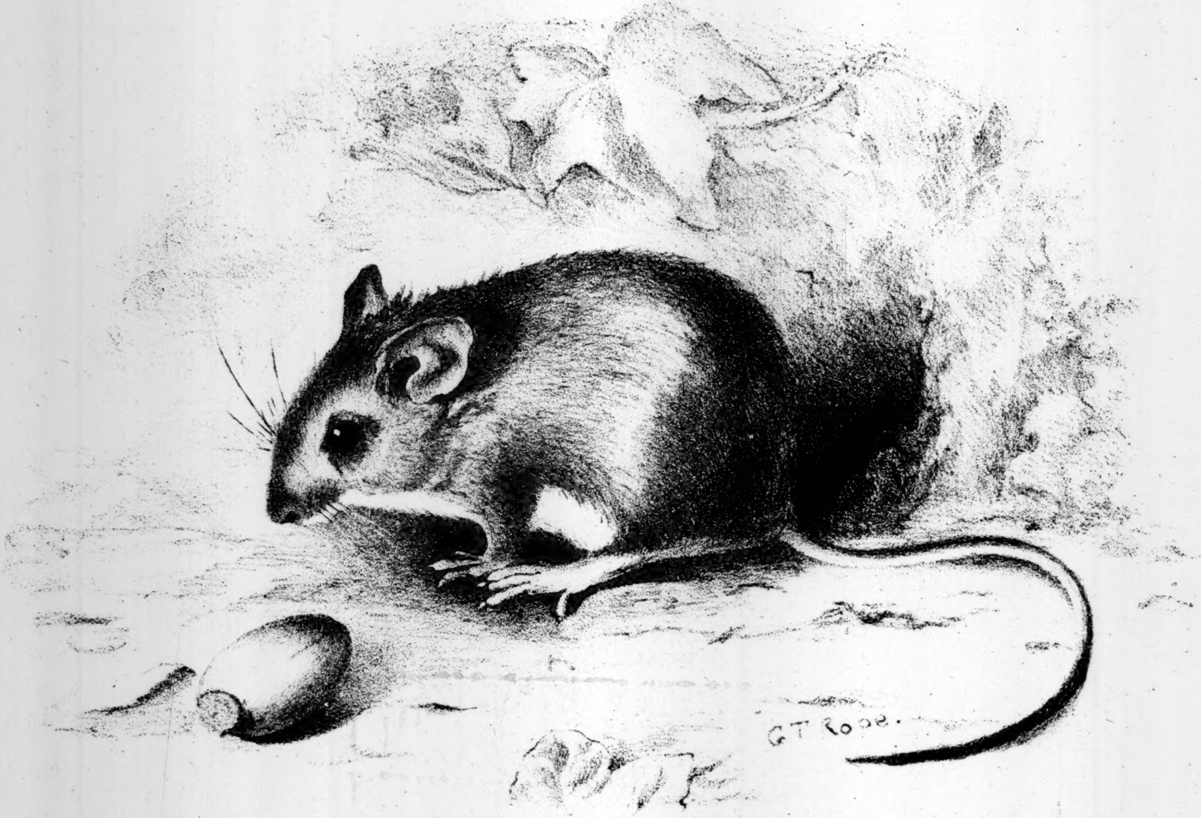
Zool. June 1887.

Plate 4.



L. Hutchinson lith.

West, Newman & Co. imp.

The long-tailed Field-mouse.
Mus sylvaticus.